Retinopathy

- Treatment is available for patients diagnosed with diabetic retinopathy. Clinical research trials are underway and have identified new medications and treatment modalities to prevent loss of vision in patients with diabetes, in addition to laser therapy (panretinal photocoagulation). Early diagnosis and treatment through yearly comprehensive eye examination is essential to identify early disease progression.
- **Type 1 diabetes:**
  Schedule yearly complete dilated and comprehensive eye examinations starting three to five years after diagnosis and/or at ten years of age, whichever is later.
- **Type 2 diabetes:**
  Schedule yearly complete dilated and comprehensive eye examinations starting shortly after diagnosis.
- **Pregnant women with pre-existing type 1 or type 2 diabetes**:
  Schedule a first trimester examination with close follow-up during pregnancy and for one year postpartum.
- **Women with type 1 or type 2 diabetes who are planning pregnancies**:
  Schedule a complete dilated and comprehensive eye examination pre-conception, with counseling on the risk of development and/or progression of diabetic retinopathy.
- Cataracts and glaucoma are more common in people with diabetes.
- In 2006, 72.0 percent of BRFSS respondents stated they had reported receiving a dilated eye exam within the previous 12 months, as compared to 77.1 percent in 2000.
- *Healthy People 2010 Objective 5-13* is for 75 percent of adults with diabetes to receive a dilated eye exam annually.
- In 2006, 18.0 percent of respondents were told that diabetes had affected their eyes or that they had retinopathy, as compared to 23.7 percent in 2000.

Retinopathy

The prevalence of diabetic retinopathy is strongly correlated with the duration of the disease. After 20 years of diabetes, nearly all persons with type 1 diabetes and > 60 percent of persons with type 2 diabetes will have some retinopathy. Twenty-one percent of persons with type 2 diabetes will have retinopathy at the time of diagnosis. Diabetic retinopathy is the leading cause of new cases of legal blindness in Americans ages 20 to 64 years, despite effective treatments to prevent visual loss or to restore useful vision. Veteran's Affair Diabetes Trial (VADT) studies conclude that improving glycemic control and normalizing blood pressure may reduce the ocular morbidity of diabetes, especially in African American and Hispanic patients.

Women who develop gestational diabetes are not at increased risk for diabetic retinopathy. However, if these women subsequently develop type 1 or type 2 disease, their retinopathy risk increases like anyone else with diabetes.

What patients are at highest risk for developing retinopathy?

Elevated A1C, as well as proteinuria, has been strongly correlated with increased risk for development of and progression of diabetic retinopathy. Poorly controlled systemic hypertension, proteinuria, and hyperlipidemia are all positively correlated with both the incidence and the rate of progression of retinopathy. Pregnancy and puberty may accelerate microvascular progression. Women with pre-existing diabetes who are planning a pregnancy should be counseled on the increased risk for development of and/or the progression of diabetic retinopathy.

Why is screening for retinopathy so important?

Diabetic retinopathy is often asymptomatic in its early stages. Screening provides a cost-effective method of detection and treatment of proliferative diabetic retinopathy and macular edema. Prevention and screening programs have the potential to bring significant savings to the Medicare/Medicaid programs and improve the long-term health of patients in today's society. Because the retinal vascular complications of diabetes can result in permanent visual impairment, laser photocoagulation therapy can prevent loss of vision in most patients with severe nonproliferative and proliferative retinopathy.

What is the recommended screening exam for retinopathy?

Yearly dilated ophthalmoscopic examination is the best current approach to annual screening. Indirect opthalmoscopy with slit lamp examination and measurement of the intraocular pressure are essential. Stereo fundus photography is a sensitive method, but this modality has not been completely evaluated for efficacy as a screening method and is not in widespread use.

Who should perform the screening exam?

The American Diabetes Association suggests that an Ophthalmologist or Optometrist with knowledge and experience in the diagnosis and management of diabetic retinopathy should perform the screening.

What screening results necessitate a referral to a retinal specialist?

Persons with clinically significant macular edema, moderate to severe nonproliferative retinopathy, or any proliferative retinopathy require the prompt care of an Ophthalmologist knowledgeable and experienced in the care of diabetic retinopathy.

Cataracts and Glaucoma

People with diabetes are at increased risk for the development of cataracts and glaucoma compared to people without diabetes. A dilated and comprehensive eye examination is the best current approach to annual screening.

References:

1. Aiello LP, et al. (1998). Diabetic retinopathy (Technical Review). *Diabetes Care* 21:143-156.
2. American Academy of Family Physicians and American Diabetes Association. (1999). The benefits and risks of controlling blood glucose levels in patients with type 2 diabetes mellitus: A review of the evidence and recommendations.
3. American Academy of Ophthalmology. (2002). Information statement: eye care for people with diabetes mellitus.
4. American Diabetes Association. (2002). Diabetic Retinopathy. *Diabetes Care*, 25(Supplement 1), S90-S93.
5. American Academy of Pediatrics. (1998). Screening for retinopathy in the pediatric patient with type 1 diabetes mellitus (RE9731). *Pediatrics*, *101*, 313-314.
6. Franz, Marion J. (2001). *A Core Curriculum for Diabetes Education: Diabetes in the Life Cycle and Research*, (4th ed.*)*.Chicago, *IL:* American Association of Diabetes Educators.
7. Roy, M., & Affour, M. (2006). Six-year progression of retinopathy and associated risk factors in African American patients with type 1 diabetes mellitus. *Archives Ophthalmology, 124, 1297-1306.*
8. Ahmed, J., Ward, T., Bursell, S., Aiello, L., Cavallerano, J., & Vigersky, R. (2006). The sensitivity and specificity of nonmydriatic digital stereoscopic retinal imaging in detecting diabetic retinopathy. *Diabetes Care, 29*, 2205-2209.
9. Chibber, R., Chibber, S., & Kohner, E. (2007). 21st century treatment of diabetic retinopathy. Expert Review Endocrinology Metabolism, 2(5), 623-631.
10. Emanuele, N., Sacks, J., Klein, R., Reda, D., Anderson, R., Duckworth, W., & Abraira, C. (2005). Ethnicity, race, and baseline retinopathy correlates in the veterans' affairs diabetes trial. *Diabetes Care, 28,* 1954-1958.
11. American Diabetes Association. (2007). Standards of medical care in diabetes. *Diabetes Care*, *30*(Supplement 1), S4-S41.
12. U. S. Department of Health and Human Services. (2001, February). *Healthy People in Healthy Communities.* Washington, DC: U. S. Government Printing Office.
13. South Dakota Department of Health. (2007). *The Health Behaviors of South Dakotans 2006.* Pierre, SD: Author. Available at: http://doh.sd.gov/Statistics/default/aspx.